



## Deer Population Management as a Strategy for Forest Restoration

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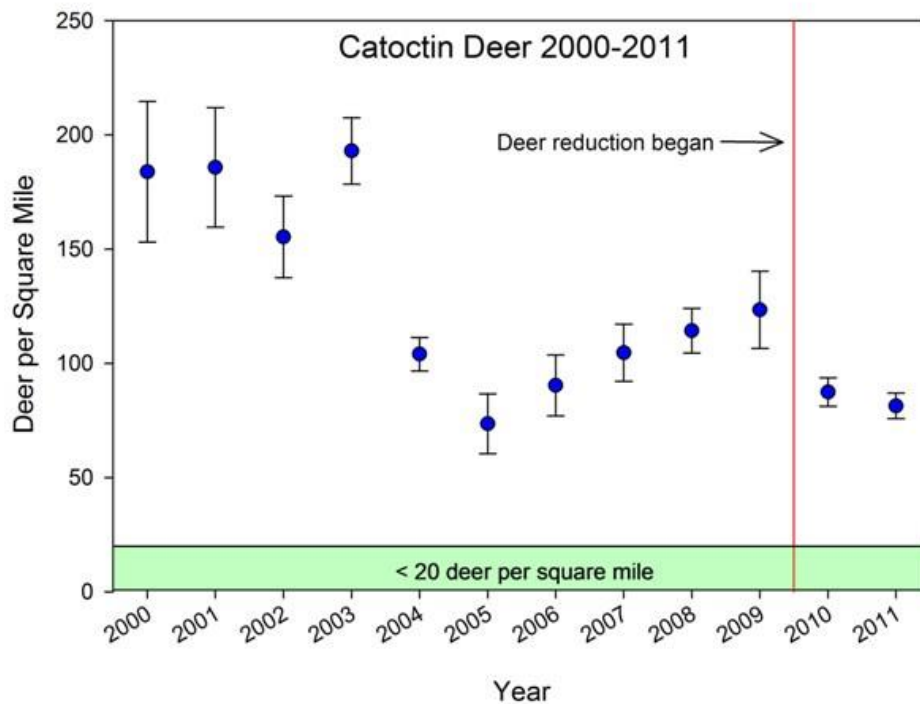
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Deer browsing for food along the forest floor, a typical scene in Central Maryland. Photo from the [Montgomery County Department of Parks](#).

The state of Maryland covers approximately 9,707 square miles. According to the Maryland Department of Natural Resources there are over 250,000 deer in Maryland. This results in a density of 25.8 deer per square mile. Of course, the distribution of deer throughout the state is not uniform, i.e., some places have much higher deer density than others (like your yard, right?). Scientists generally agree that forest habitats in the eastern United States can sustainably support 20 deer per square mile. This determination is based upon both the health of the deer herd and the consistent availability of food to graze. It is notable that the overall density of deer in Maryland already exceeds the recommended deer density, but how high does the density get in some Maryland areas?

Catoctin Mountain Park in Northwestern Frederick has struggled with overpopulation of deer for quite some time. Being managed by the National Park Service, hunting is not allowed within the park. From 2000 to 2003, the density of deer in the 9 square mile park was about 175 deer per square mile! The density fell somewhat in 2004 to around 100 deer per square mile, but was back up to 123 deer per square mile by 2009. This density in 2009 equates to approximately 1100 deer in the park (Graph 1).



Graph 1. Deer density trends at Catoclin Mountain Park between 2000 and 2011. Graph provided by National Park Service. Original source available [here](#).

The Park started to actively manage white-tailed deer in 2009 according to their [Final White-Tailed Deer Management Plan / Environmental Impact Statement, Catoclin Mountain Park](#) (Authored by the United States National Park Service). Between 2009 and 2014, sharpshooters managing deer in the park had culled 968 deer, reducing the deer density to approximately 36 deer per square mile (Graphs 2 and 3). Note that the spring 2014 deer population in the Park was 325 deer. If you do a little math, you will quickly note how rapidly the deer herd reproduces. The 1100 deer at the start of management minus the 968 deer culled over 5 years would leave only 132 at the end of management, but this ignores reproduction and immigration into the park. Even if you don't like math, you can see how resilient white tail deer populations can be.

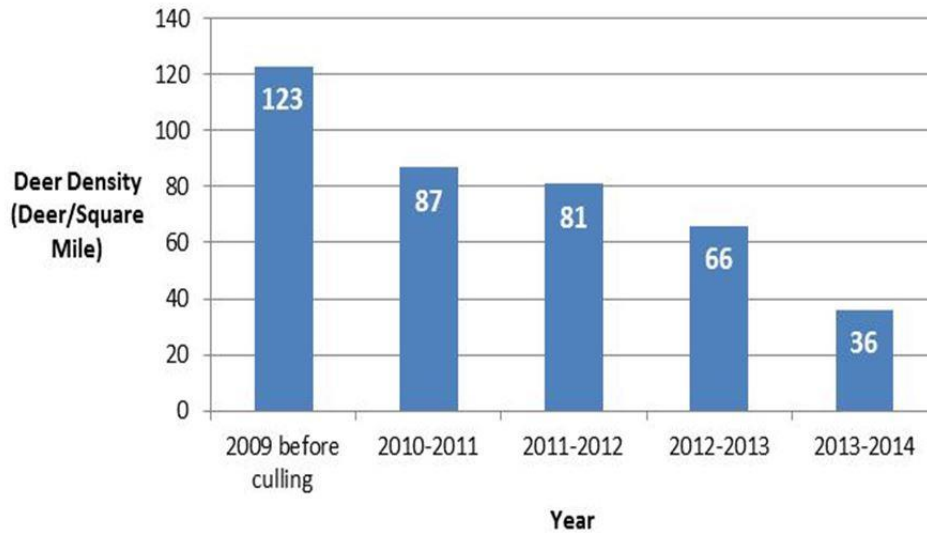


Figure 2. Deer density in Catoclin Mountain Park each year of the managed cull. Graph from National Park Service. Original source available [here](#).

Instituting such an aggressive deer management plan on federally owned land managed by the National Park Service certainly was not an easy decision. A quick search on the internet in the local Frederick media will reveal that there were many negative opinions of the NPS management technique. However, given limited alternatives and budget, the NPS concluded that the culling strategy was the best one. Vegetative surveys in the park in the years prior to deer management found severe over-browsing of the understory and concurrent change in the composition of plant species in the forest. A [study by Wesley Knapp and Richard Weigand](#) throughout the Catoclin Mountains of Frederick even correlated the decline of 19 of 21 orchid species from 1968-2008 to the increased population of white-tailed deer in the area over the same time frame.

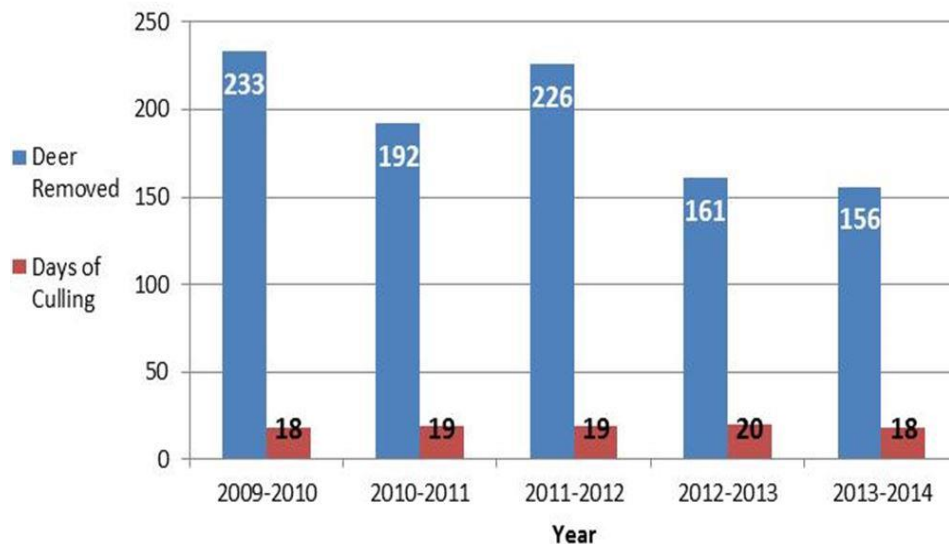


Figure 3. Yearly number of deer removed from Catoclin Mountain Park by sharpshooters each year of the managed cull. Graph from National Park Service. Original source available [here](#).

What is the point of providing an overly simplified description of the deer population issue at Catoclin Mountain Park? Other articles such as [Brian Palmer's 2013 article in the Washington Post](#) offer arguably more complete information about how deer populations have ballooned and become an environmental issue. The Monocacy and Catoclin Watershed Alliance is primarily focused on issues related to water quality. But, water quality is dependent upon the health of the entire watershed. Well-rooted and thriving vegetation is crucial to sediment control, nutrient cycling, and attenuation of storm flow. The connection between deer density and water quality is quite evident, at least ecologically speaking. So as we go about our daily efforts to improve water quality, we need to think beyond the specialization of our work and temper the severity of our opinions. Remember that ecological imbalances are not always easy to repair, and solutions that please everyone may not be possible. Sitting back and watching nature run its course or waiting for that large budget to be approved so that the most sophisticated management technique can be used are not viable options for many of our natural resource challenges.